mar 2 c

PATENT APPLICATION AF 1733

PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Masaharu OKU et al.

On Appeal from Group: 1733

Application No.: 09/347,525

Examiner: G. KNABLE

Filed: July 6, 1999

Docket No.: 103778

For: METHOD AND APPARATUS FOR THE LAMINATION OF BAND-SHAPED UNCURED RUBBER MATERIALS

APPEAL BRIEF TRANSMITTAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto are three (3) copies of our Brief on Appeal in the above-identified application.

The amount of Three Hundred Thirty Dollars ($330.00) in payment of the Brief fee under 37 C.F.R. 1.17(c) is not required as the fee was paid in a prior appeal in this application with no Board Decision on the merits. In the event of any underpayment or overpayment, please debit or credit our Deposit Account No. 15-0461 as needed in order to effect proper filing of this Brief.

For the convenience of the Finance Division, two additional copies of this transmittal letter are attached.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Seth S. Kim
Registration No. 54,577

JAO:SSK/jfb

Date: March 18, 2004

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of:	On Appeal from Group 1733
Masaharu OKU et al.	
Application No.: 09/347,525	Examiner: G. Knable
Filed: July 6, 1999	Docket No.: 103778

For: METHOD AND APPARATUS FOR THE LAMINATION OF BAND SHAPED UNCURED RUBBER MATERIALS

BRIEF ON APPEAL

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400
Attorneys for Appellants

TABLE OF CONTENTS

I. INTRODUCTION

This is an appeal from a Final Rejection mailed July 28, 2003, finally rejecting claims 1-4, 6, 8 and 13-15 of the above-identified patent application. The rejection of the claims was previously appealed on September 5, 2002 but no Board decision on the Merits was obtained. Instead, claims 13-15 were prosecuted further to address 35 U.S.C. §112, second paragraph issues. The two 35 U.S.C. §103(a) rejections over the references were consolidated into a single rejection but the reasons for the rejection are unchanged. No claims are allowed.

A. Real Party in Interest

The real party in interest for this appeal is Bridgestone Corporation, by way of an assignment recorded in the U.S. Patent and Trademark Office at Real/Frame 010087/0191.

B. Statement of Related Appeals and Interferences

There are presently no appeals or interferences, known to Appellants, Appellants' representative or the Assignee, which will directly affect or be directly affected by, or have a bearing on the Board's decision in this appeal.

C. Status of Claims

Claims 1-4 and 6-15 are pending. Claims 1-4, 6, 8 and 13-15 stand rejected and are on appeal. Claims 7 and 9-12 are withdrawn from further consideration as being drawn to a non-elected group of claims and species. Claims 1-4, 6, 8 and 13-15 are set forth in the attached Appendix. Claim 1 is an independent claim. Claims 2-4, 6 and 8 depend directly from claim 1. Claim 13 depends directly from claim 2 and indirectly from claim 1. Claim 14 depends directly from claim 3 and indirectly from claim 1. Claim 15 depends directly from claim 4 and indirectly from claim 1.

D. Status of Amendments

The Amendment filed on May 14, 2003 is the last Amendment which has been entered. Claim 1 is found in the December 17, 2001 Amendment. Claims 13-15 are found

in the Amendment filed May 14, 2003. Claims 2-4, 6 and 8 are originally filed claims, which have not been amended. All claim amendments have been entered of record. The Amendment filed on May 14, 2003 was considered by the Examiner.

II. SUMMARY OF THE INVENTION AND APPLIED REFERENCES

A. The Claimed Invention

This invention is directed to a method for the lamination of band-shaped uncured rubber materials, by extruding two or more uncured rubber materials having different moduli after the curing through an extruder and laminating the extruded band-shaped rubber materials on a rotating support to form a set of rubber members, such as in the building of pneumatic tires.

In the production of various rubbers products, for example, pneumatic tires, the products may require a plurality of different component rubbers with varying strengths and properties. Particular types of rubber may be suited for particular parts of the rubber product. However, in conventional production of rubber, differences in the properties between adjoining rubbers in pneumatic tires, for example, create a considerably large modulus difference when using different rubber composites. Further, when such adjoining rubbers are subjected to repeated strains, forces acting on their joints over a long period of time cause the joints to separate and the rubbers to come apart.

Therefore, in order to solve this problem, the invention gradually varies the composition from a rubber with a first modulus to a rubber having a second modulus in order to prevent an abrupt joint face from appearing when using two or more rubber compositions. In particular, the invention includes a method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, which comprises using two or more rubber compositions indicating different moduli

after the curing as a rubber material fed to the extruder, extruding a first rubber material through the extruder and helically winding the first rubber material on the rotating support to form a first rubber layer, and continuously extruding the first rubber material and a second rubber material through the extruder so as to stepwise or gradually increase a blending ratio of the second rubber material to the first rubber material while holding the same extrusion sectional shape and helically winding on the first rubber layer while overlapping with at least a part of the first rubber layer to form a second rubber layer. The blending proceeds from purely the first rubber material to purely a second rubber material in a gradual or step-wise progression.

Fig. 1 shows an illustrative example of an apparatus for laminating band-shaped uncured rubber material as illustrated in Figs. 2-10. As shown in Fig. 1, the apparatus includes the combination of a rotating support 1 and an extruder 2. The rotating support 1 is used to wind the uncured band-shaped rubber material extruded from the extruder 2. The extruder 2 is arranged so as to locate a band-shaped rubber feeding portion 2a of the extruder 2 in the vicinity of the surface of the support 1 (see pages 7-8).

The extruder 2 is provided with feeding devices 3a, 3b, 3c individually feeding three uncured rubber materials A, B, C in the illustrative embodiment. The rubber feeding devices 3a, 3b, 3c are provided with a feed control means 4 for individually adjusting the feeding quantities of the rubber materials A, B, C, respectively. Each of the rubber materials A, B, C passed through the feed control means 4 is fed into the extruder 2 through a hopper and a feeder 5 (see page 8, lines 10-17).

Further, the extruder 2 is provided with a straight line moving mechanism 6 that moves the extruder 2 along a central axis line X of a rotating axis 1a of the support 1. This movement of the extruder 2 allows band-shaped uncured rubber material to be helically and continuously wound on the surface of the support 1 (see page 8, line 27-page 9, line 10).

Fig. 2 shows an illustrative example of a laminated rubber member comprising a first rubber layer A and a second rubber layer A+B formed by the method according to the invention at a section taken in the direction of the axial line X of the support 1. At first, a first rubber material A is fed to the extruder 2 and extruded from a feeding portion 2 in the form of a band-shaped uncured rubber material A, which is helically and successively wound on the rotating support 1 to form a first rubber layer A. Subsequently, a blend (A+B) of the first rubber material A and a second rubber material B is continuously fed to the extruder 2 and extruded from the feeding portion 2a of the extruder 2 in the form of a band-shaped uncured rubber blend (A+B) while holding the same extrusion sectional shape, which is helically and successively wound on the first rubber layer to form a second rubber layer (A+B). Thus, the method forms a laminated rubber member {A+(A+B)} (see pages 9-10).

After the formation of the first laminated rubber member {A+A+B)}, only the rubber material B is continuously extruded from the extruder 2 while holding the same extrusion sectional shape as in the rubber blend (A+B). The thus extruded band-shaped uncured rubber material B is helically and successively wound on the first laminated rubber member {A+(A+B)} to form a third rubber layer B, whereby a second laminated rubber member {A+(A+B)+B} is formed. In this case, the rubber material B is overlapped with at least a part of the second rubber layer (A+B) (See page 11, lines 3-10).

After the formation of the second laminated rubber member {A+(A+B)+B}, a blend (B+C) of the second rubber material B and a third rubber material C is subsequently and continuously fed to the extruder 2 and extruded from the feeding portion 2a of the extruder 2 in form of a band-shaped uncured rubber blend (B+C) while holding the same extrusion sectional shape, which is helically and successively wound on the second laminated rubber member ({A+(A+B)+B)} to form a fifth rubber layer (B+C). Thus, a third laminated rubber member {A+(A+B)+B+(B+C)} is formed (See page 11, lines 20-27).

After the formation of the third laminated member {A+(A+B)+B+(B+C)}, only the rubber material C is continuously extruded from the extruder 2 while holding the same extrusion sectional shape as in the rubber blend d(B+C). The thus extruded band-shaped uncured rubber material C is helically and successively wound on the third laminated rubber member {A+(A+B)+B+(B+C)} to form a fifth rubber layer, whereby a fourth laminated rubber member {A+(A+B)+B+(B+C)+C} is formed. In this case, the rubber material C is overlapped with at least a part of the fourth rubber layer (B+C) (See page 12, lines 13-21). This process may continue until a desired final rubber product is formed.

Fig. 3 shows a relation between the feeding ratio and the feeding time of the rubber materials A and B fed into the extruder 2 in the formation of the first laminated rubber member shown in Fig. 2. As shown in Fig. 3, only the rubber material A is fed to the extruder 2 from a feeding start time T_0 to a feeding time T_1. At the feeding time T_1, the feeding of the rubber material B is started to form a rubber blend A+B. Gradually, the feed of rubber material A is decreased while the feed of rubber material B is increased, where eventually, the feed of the rubber material A will be discontinued and only rubber material B will be extruded from the extruder 2 forming the structure shown in Fig. 4. Consequently, a rubber material is formed alternatively whereby between rubber layers, there is a blended layer until all the desired layers are formed. The alternating layers are shown as they are formed in Figs. 4-9.

B. <u>The Applied References</u>

1. <u>U.S. Patent No. 3,170,499 to Deist</u>

Deist discloses two specific embodiments for supplying rubber to be applied to a tire carcass. Embodiment 1, shown in Fig. 1, shows three separate breakdown mills 40, 41 and 42 which are driven to masticate a mass of rubber material. Each breakdown mill produces a strip 52 supplied to a blending mill 10 where mastication of the material into a tacky

plasticized mass occurs. Thereafter, a strip 20 is further led to a ribbon calendar 24 having a V-shaped groove 29 to draw a strip 35 which is then strip wound on a carcass 36 (see col. 3, line 35-col. 4, line 8). However, embodiment 1 fails to disclose, for example, an extruder, or helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support.

Fig. 2 shows a second embodiment and an alternative approach to supplying different types of rubber stocks to a blending mill for forming a continuous rubber material strip to be applied to a tire carcass. The structure involves a blending mill 70 driven by two mill rolls 71 and 72. Material is supplied through separate pellet hoppers 75, 76 and 77 in pelletized form. The mill rolls 71 and 72 each have a V-shaped groove 90 that allows for a strip of rubber 93 to be extracted and applied to a tire carcass (see col. 6, line 48-col. 7, line 16). However, embodiment 2 fails to disclose helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, or stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material.

2. U.S. Patent No. 2,849,049 to Hanson

Hanson shows a method of making pneumatic vehicle tires, especially the tread portion and the sidewall portions of the carcass band by forming a ribbon of very small cross section relative to the tire cross section, and leading the ribbon directly onto the carcass band and by winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band to partially overlap successive turns of the ribbon, tread and sidewall portions having exact cross sectional contour and uniform density. Figs. 1 and 2 show a tire building drum 24 and an extruding machine 60 mounted on a suitable support 61 (see col. 3, lines 42-59). A ribbon extruded from the extruding machine 60 through an extruding die 63, is led between rollers 74 and 76, then between the rollers 74 and 70, and around roller 70 onto the drum (see col. 4, lines 33-72). The path of

the ribbon between the rolls 74 and 76, and then between rolls 74 and 70, prevents the entrapment of air between overlapping turns of the ribbon as the ribbon is laid down on the drum (see col. 4, line 72-col. 5, line 14). During operation of Hanson's machine, it is stated it may be necessary to stop the machine and clean out the tuber 60 before feeding a tread stock when a change from white to black stock is made, or when the tread stock is substantially different in composition and character (see col. 7, lines 39-44).

However, Hanson fails to disclose using two or more rubber compositions indicating different moduli, or continuously extruding a first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, and stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped rubber member.

3. **U.S. Patent No. 6,039,826 to Okada**

Okada discloses a method of forming a green tire which comprises winding on an adjusting drum, a rubber strip made of unvulcanized rubber extruded from an extruder in a length corresponding to the rubber quantity of a tire constituent portion, and forming the tire constituent portion by continuously winding a plurality of times the rubber strip on the outer circumference of a rotary support member, while unwinding the rubber strip from the adjusting drum onto the rotary support member. Fig. 1 shows an extruder 1 for continuously extruding an unvulcanized rubber strip S and an adjusting drum 2 driven to wind the rubber strip S, and a building drum 3 driven for rotation as to form a precursor of a green tire. The adjusting drum 2 and the building drum 3 are positioned to oppose each other so that their rotary shafts 2a, 3a are parallel with each other (see col. 3, lines 26-35).

The unvulcanized rubber is extruded from the extruder 1 as a continuous rubber strip S and is then wound spirally on the adjusting drum 2 at a constant speed (see col. 3, lines 41-44). Only a quantity corresponding to the rubber quantity needed to make a

specific portion of a green tire is extruded. When being taken up into the adjusting drum 2, the rubber strip S is wound while being spaced apart at a constant pitch P in order to prevent overlapping of one another (see col. 3, lines 46-54). When the take-up of the extruded rubber strip S is completed, the rubber strip S is then unwound by synchronously rotating the building drum 3, and the rubber strip S is unwound from the adjusting drum 2 to be applied to the building drum 3 (see col. 3, lines 55-67).

However, Okada fails to disclose using two or more rubber compositions indicating different moduli, or continuously extruding a first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, and stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped rubber member.

III. THE ISSUES ON APPEAL

The May 14, 2003, Office Action rejects claims 1-4, 6, 8 and 13-15 under 35 U.S.C. §103(a) as being unpatentable over Deist (U.S. Patent No. 3,170,499) taken alone or further in view of Hanson (U.S. Patent No. 2,849,049) and Okada (U.S. Patent No. 6,039,826). Thus, the issues on appeal are:

1) whether claims 1-4, 6, 8 and 13-15 are obvious over Deist;
2) whether claims 1-4, 6, 8 and 13-15 are obvious over Deist in view of Hanson and Okada.

IV. GROUPING THE CLAIMS ON APPEAL

Each claim of this patent application is separately patentable, and upon issuance of a patent will be entitled to a separate presumption of validity under 35 U.S.C. §282. For convenience in handling of this appeal, the claims are grouped as follows:

Group I, claim 1;

Group II, claim 2;

Group III, claim 3;

Group IV, claim 4;

Group V, claim 6;

Group VI, claim 8; and

Group VII, claims 13, 14 and 15.

Each of Groups I-VII will be argued separately in the following arguments. The groups do not stand or fall together.

V. LAW REGARDING FACTUAL INQUIRIES TO DETERMINE OBVIOUSNESS/NON-OBVIOUSNESS

In rejecting claims under 35 U.S.C. 103, it is incumbent on the examiner to establish a factual basis to support the legal conclusion of obviousness. See, In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that

the prior art may be modified in the manner suggested by the examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish prima facie obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). It is well settled that a rejection based on 35 U.S.C. 103 must rest on a factual basis, which the Patent and Trademark Office has the initial duty of supplying. In re GPAC, Inc., 57 F.3d 1573, 1582, 35 USPQ2d 1116, 1123 (Fed. Cir. 1995). A showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This evidence may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996). However, the suggestion more often comes from the teachings of the pertinent references. See In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See Dembiczak, 175 F.3d at 1000, 50 USPQ2d at 1617. However, the suggestion to combine need not be expressed and "may come from the prior art, as filtered through the knowledge of one skilled in the art." Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1472, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997). It is impermissible for an examiner to engage in hindsight reconstruction of the claimed invention using appellant's structure as a template and selecting elements from references to fill the

page. The references themselves must provide some teaching whereby the appellant's combination would have been obvious. In re Gorman, 911 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir, 1991). That is, something in the prior art as a whole must suggest the desirability, and thus obviousness, of making the combination. See, In re Beattie, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992); Lindemann Machinenfabrik GMBH v. American Hoist and Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984).

VI. ARGUMENTS

A. Claim 1 is not Obvious over Deist

Claim 1 recites a method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, which comprises using two or more rubber compositions indicating different moduli after the curing as a rubber material fed to the extruder, extruding a first rubber material through the extruder as a first band-shaped rubber member and helically winding the first band-shaped rubber member on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, and continuously extruding the first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, and stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped member while holding the same extrusion sectional shape and helically winding on the first rubber layer while overlapping with at least part of the first rubber layer and overlapping at least widthwise edge portions of the wound second band-shaped rubber member with each other to form a second rubber layer.

Deist specifically teaches away from the invention. Deist is directed towards using a blending mill 10 which combines rubber, supplied from a plurality of breakdown mills 40, 41 and 42, to form a rubber strip 20. The rubber strip 20 is then transported to a ribbon calendar 24 in order to form strips 35 of rubber, which are drawn for final application on a tire carcass as seen in Fig. 1.

Fig. 1 of Deist fails to disclose the invention because Fig. 1 of Deist does not show extruders. Although Deist mentions using extruders, such is only mentioned in passing that extruder means may be used in place of one or more of the mills and calendar (see col. 7, lines 34-40). This throwaway passage only suggests a device similar to that shown in Fig. 1 of Deist. Namely, the passage suggests replacing the blending mills 40, 41, 42 and 10, and calendar 24 with extruders. Consequently, the passage in Deist merely suggests providing five separate extruders; one each for each of the mills 40, 41, 41 and 10 and calendar 24. Therefore, the suggestion in Deist regarding the extruder does not teach the invention which eliminates the need for mills or multiple extruders.

The inference that Deist's mentioning of the desirability of extruders is merely a throwaway passage is strengthened by Deist's repeated insistence of the importance of the mastication of the material by the action of the driven mill to obtain a tacky plasticized mass with an appropriate temperature and consistency (see col. 3, lines 35-50). Even for the embodiment shown in Fig. 2, Deist again uses a blending mill 70 with two driven mill rolls 71, 72 to masticate the Pelletized rubber material fed from the hoppers 75, 76, 77 (see col. 6, lines 14-18, and lines 51-56). The two embodiments of Deist show that Deist limited his disclosure to a blending mill and did not contemplate extruders as a viable alternative to the blending mill.

Further, Deist did not consider extruders as a viable alternative to the blending mill because Deist specifically references Hanson, which uses an extruder (see col. 4, lines 15-18

of Deist). However, Deist does not incorporate Hanson by reference. This failure to incorporate extruders into specific embodiments in Deist raises an inference that Deist did not see extruders as a solution in his disclosure. This inference is strengthened by a disclosure in Deist that lamination of the rubber can be carried out after calendaring (as chosen by Deist) or being extruded (see col. 1, lines 57-60). Consequently, despite Deist mentioning replacing the mills and calendar with extruders, and despite Deist referencing Hanson, which uses extruders, the fact that Deist does not show actual use of extruders suggests to one of ordinary skill in the art that Deist would not see extruders as a solution.

The inference that Deist did not see extruders as a solution is further strengthened by Deist's disclosures of the intricate workings of the knives that control the rate of supply of the rubber material with respect to the breakdown mills 40, 41 and 42, and with respect to the blending mill 10, or blending mill 70. In Fig. 2, trim knives 91 again are controlled to form a strip 93 of rubber (see col. 6, lines 43-47). All of these essential structures will have to be scrapped when an extruder is used, and yet Deist does not explain how extruders will work to replace the knives.

Moreover, both Deist and Hanson are assigned to the same assignee, namely, Firestone Tire and Rubber Company, and in the case of Hanson, it was patented in 1958 compared to Deist's date of 1965. Therefore, Deist knew full well the disclosure in Hanson because not only did Deist reference Hanson, but Deist had access to the patent to practice it. Despite all these opportunities to use an extruder in his disclosure, Deist moved away from using extruders and instead used mills and calendar. Therefore, Deist teaches away from using extruders and by extension, fails to suggest the invention.

Fig. 1 of Deist does not suggest the invention. Further, Fig. 2 of Deist also fails to suggest the invention. Fig. 2 of Deist shows supplying different types of rubber stocks to a blending mill for forming a continuous rubber material strip to be applied to a tire carcass.

The structure involves a blending mill 70 driven by two mill rolls 71 and 72. Material is supplied through separate pellet hoppers 75, 76 and 77 in pelletized form. The mill rolls 71 and 72 each have a V-shaped groove 90 that allows for a strip of rubber 93 to be extracted and applied to a tire carcass. Further, Fig. 2 of Deist shows the three hoppers 75, 76 and 77, each provided with different type rubbers A, B and C, and Deist specifically discloses that A, B and C are supplied sequentially, i.e., one pellet feed is started only after supply of the previous rubber pellets is stopped (see col. 6, lines 60-70). That is, Deist specifically discloses that when a portion of a tire is built using a specific stock of pellet, the supply of that specific stock of pellet is terminated and the supply of stock of a different pellet is commenced.

In fact, such a method of adding different rubber pellets sequentially, and only after the supply of previous supply is stopped, suggests that any rubber blending in Fig. 2 of Deist is generally abrupt, not step-wise or gradual as claimed in claim 1. It is noted that Deist does not disclose that two or more different rubber pellets may be added simultaneously but in differing proportions to achieve a step-wise or gradual change. But instead, Deist insists on adding different rubber pellets sequentially. Consequently, any section resulting from the above process disclosed in Fig. 2 of Deist will have an abrupt change in composition from a first stock to a second stock. The method of adding pellets disclosed in Fig. 2 of Deist will clearly produce an abrupt change, as understood by one of ordinary skill in the art. As such, Deist may be inferred not to understand or minimizes the importance of the transition from, or boundary between one composition and a second composition.

Further, Figs. 1 and 2 of Deist show completely different ways of supplying rubber to a calendar. Fig. 1 shows blending mills while Fig. 2 shows hoppers. The two embodiments are mutually exclusive and none show the invention. Further, the way each embodiment works is so unique to each embodiment, the elements of one can not be used to

substitute for the elements of the other. Therefore, any disclosure specific to each of the embodiments shown in Figs. 1 and 2 must be limited to that particular embodiment. Using Applicants' teaching as a template, it is possibly conceivable one might associate a gradual changing of the composition in the first embodiment of Deist where three break-down mills are used to supply three different rubber to a calendar, but even that does not address this teaching away from using extruders. Further, in the second embodiment of Deist, which is the applied embodiment where three hoppers are used, the sequential adding of the stock of rubber pellets, as disclosed, will create a generally abrupt change in the tire when the rubber is applied to the tire carcass.

Moreover, both embodiments of Deist fail to disclose a method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, or overlapping at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer. Consequently, claim 1 recites more than what Deist discloses. Deist merely discloses that strip of rubber drawn from a ribbon calendar 24 is wound on a surface of a tire carcass (see col. 4, lines 2-5). Deist does not suggest how a strip should be wound and in what manner. Further, Deist fails to disclose how the separate layers are wound. Deist merely references Hanson for any disclosure for winding the ribbon onto a tire carcass (see col. 4 lines 15-18). Therefore, Deist knowing full well the disclosure in Hanson, moved away from using extruders and instead used mills and calendar. Consequently, Deist fails to suggest anything other than winding the ribbon onto a carcass.

Thus, Deist alone fails to teach each and every feature recited in claim 1. Therefore, Deist alone does not render obvious the subject matter of claim 1. Accordingly, the

rejection of claim 1 under 35 U.S.C. §103(a) as obvious by Deist is improper and should be reversed.

B. Claim 2 is not Obvious over Deist

Claim 2 recites that only the second rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the second rubber layer so as to overlap with at least a part of the second rubber layer to form a third rubber layer.

Deist fails to disclose an extruder or a method for successively extruding second rubber material through the extruder while holding the same extrusion sectional shape and helically winding on the second rubber layer so as to overlap with at least a part of the second rubber layer to form a third rubber layer. Deist merely discloses that strip of rubber drawn from a ribbon calendar 24 is wound on a surface of a tire carcass (see col. 4, lines 2-5). Deist does not suggest how a strip should be wound and in what manner. Further, Deist fails to disclose how the separate layers are wound. Deist merely references Hanson for any disclosure for winding the ribbon onto a tire carcass (see col. 4 lines 15-18). Consequently, Deist fails to suggest anything other than winding the ribbon onto a carcass. Thus, there is no logical reason or suggestion for Deist to form a third layer as recited in claim 2. Therefore, Deist alone does not render obvious the subject matter of claim 2. Accordingly, the rejection of claim 2 under 35 U.S.C. §103(a) as obvious by Deist is improper and should be reversed.

C. Claim 3 is not Obvious over Deist

Claim 3 recites the second rubber material and a third rubber material are successively extruded through the extruder so as to stepwise or gradually increase a blending ratio of the third rubber material to the second rubber material while holding the same extrusion sectional

shape and helically wound on the third rubber layer while overlapping with at least a part of the third rubber layer to from a fourth rubber layer.

Deist fails to disclose an extruder or a method of successively extruding a second rubber material and a third rubber material through the extruder so as to stepwise or gradually increase a blending ratio of the third rubber material to the second rubber material while holding the same extrusion sectional shape and helically wound on the third rubber layer while overlapping with at least a part of the third rubber layer to form a fourth rubber layer. Deist merely discloses that strip of rubber drawn from a ribbon calendar 24 is wound on a surface of a tire carcass (see col. 4, lines 2-5). Deist does not suggest how a strip should be wound and in what manner. Further, Deist fails to disclose how the separate layers are wound. Deist merely references Hanson for any disclosure for winding the ribbon onto a tire carcass (see col. 4 lines 15-18). Consequently, Deist fails to suggest anything other than winding the ribbon onto a carcass. Therefore, there is no logical reason or suggestion for Deist to form a fourth layer as recited in claim 3.

Deist alone fails to teach each and every feature recited in claim 3. Therefore, Deist alone does not render obvious the subject matter of claim 3. Accordingly, the rejection of claim 3 under 35 U.S.C. §103(a) as obvious by Deist is improper and should be reversed.

D. Claim 4 is not Obvious over Deist

Claim 4 recites only the third rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the fourth rubber layer so as to overlap with at least a part of the fourth rubber layer to form a fifth rubber layer.

Deist fails to disclose an extruder or that a third rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the fourth rubber layer so as to overlap with at least a part of the fourth rubber

layer to form a fifth rubber layer. Deist merely discloses that strip of rubber drawn from a ribbon calendar 24 is wound on a surface of a tire carcass (see col. 4, lines 2-5). Deist does not suggest how a strip should be wound and in what manner. Further, Deist fails to disclose how the separate layers are wound. Deist merely references Hanson for any disclosure for winding the ribbon onto a tire carcass (see col. 4 lines 15-18). Consequently, Deist fails to suggest anything other than winding the ribbon onto a carcass. Therefore, there is no logical reason or suggestion for Deist to from a fifth layer as recited in claim 4.

Deist alone fails to teach each and every feature recited in claim 4. Therefore, Deist alone does not render obvious the subject matter of claim 4. Accordingly, the rejection of claim 4 under 35 U.S.C. §103(a) as obvious by Deist is improper and should be reversed.

E. Claim 6 is not Obvious over Deist

Claim 6 recites that two or more rubber materials having such a property that at least one of 100% modulus and 300% modulus after the curing differs by not less than 1.0 MPa between the two rubber materials to be extruded.

Deist merely recognizes the desirability of employing a sizable number of different stocks in tire building with each stock being disposed to form a predetermined portion of the tire where its characteristic would be most effectively used (see col. 2, lines 13-17). Consequently, Deist merely disclose that several types of rubber can be used, for instance, hypothetical rubbers A, B and C with the mills (see col. 4, lines 60-63) or with the hoppers (see col. 6, lines 15-22). Deist does not disclose the specific properties of the different rubber types or how the different rubber types relate to each other. In fact, Deist fails to disclose how different each of the rubber types are from each other.

Consequently, Deist fails to disclose or teach that the different types of rubber used have such a property that at least one of a 100% modulus and 300% modulus after curing differs by not less than 1.0 MPa between the two rubber materials to be extruded. Thus,

Deist fails to disclose each and every feature of claim 6. Therefore, Deist alone does not render obvious the subject matter of claim 6. Accordingly, the rejection of claim 6 under 35 U.S.C. §103(a) as obvious by Deist is improper and should be reversed.

F. Claim 8 is not Obvious over Deist

Claim 8 recites that among three rubber materials, the first rubber material is a rubber composition for a tread under cushion in the cured tire, the second rubber material is a rubber composition for a tread base, and the third rubber material is a rubber composition for a tread cap.

Deist fails to disclose an extruder or a method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support. Further, Deist fails to disclose helically winding the first band-shaped rubber member on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, or other subsequent layers. Consequently, Deist fails to disclose three rubber materials, the first rubber material is a rubber composition for a tread under cushion in the cured tire, the second rubber material is a rubber composition for a tread base, and the third rubber material is a rubber composition for a tread cap, as recited in claim 8, that is made using an extruder and a method, among others, of helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, and further helically winding the first band-shaped rubber member on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, or other subsequent layers.

Thus, Deist alone fails to teach each and every feature recited in claim 8. Therefore, Deist alone does not render obvious the subject matter of claim 8. Accordingly, the rejection of claim 8 under 35 U.S.C. §103(a) as obvious by Deist is improper and should be reversed.

G. Claims 13, 14 and 15 are not Obvious over Deist

Claims 13-15 recite respectively that the second, the second and the third, and the third rubber material extruded through the extruder and forming the third, the fourth and the fifth rubber layer, respectively, is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other. Claim 13 depends from claim 2, claim 14 from claim 3 and claim 15 from claim 4.

Deist fails to disclose an extruder or that each of the respective rubber material extruded through the extruder and forming each of the respective rubber layer is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other. Deist merely discloses that strip of rubber drawn from a ribbon calendar 24 is wound on a surface of a tire carcass (see col. 4, lines 2-5). Deist does not suggest how a strip should be wound and in what manner. Further, Deist fails to disclose how the separate layers are wound. Deist merely references Hanson for any disclosure for winding the ribbon onto a tire carcass (see col. 4 lines 15-18). Consequently, Deist fails to suggest anything other than winding the ribbon onto a carcass.

Thus, Deist alone fails to teach each and every feature recited in claims 13, 14 and 15. Therefore, Deist alone does not render obvious the subject matter of claims 13, 14 and 15. Accordingly, the rejection of claims 13, 14 and 15 under 35 U.S.C. §103(a) as obvious by Deist is improper and should be reversed.

H. Claim 1 is not Obvious over Deist in view of Hanson and Okada

Claim 1 recites a method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, which comprises using two or more rubber compositions indicating different moduli after the curing as a rubber material fed to the extruder, extruding a first rubber material through the extruder as a first band-shaped rubber member and helically winding the first band-shaped rubber member on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, and continuously extruding the first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, and stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped member while holding the same extrusion sectional shape and helically winding on the first rubber layer while overlapping with at least part of the first rubber layer and overlapping at least widthwise edge portions of the wound second band-shaped rubber member with each other to form a second rubber layer.

A *prima facie* case of obviousness has not been shown to reject claim 1 in view of Hanson and Okada. Deist specifically teaches away from the invention as discussed in paragraph VI.A.

Hanson fails to overcome the deficiencies in Deist as also discussed in paragraph VI.A. Specifically, Hanson fails to show overlapping at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, or continuously extruding the first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, and stepwise or

gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped member while holding the same extrusion sectional shape and helically winding on the first rubber layer while overlapping with at least part of the first rubber layer and overlapping at least widthwise edge portions of the wound second band-shaped rubber member with each other to form a second rubber layer. Moreover, Hanson fails to show using two or more rubber compositions indicating different moduli after the curing.

Hanson shows a method of making pneumatic vehicle tires by forming a ribbon of a very small cross section relative to the tire cross section, leading the ribbon directly onto the carcass band and winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band to partially overlap successive turns of the ribbon. That is, Hanson merely discloses that successive turns of the ribbon overlaps previously laid ribbons (see col. 2, lines 45-51 and col. 5, lines 25-30). This is distinguishable from claim 1.

Furthermore, Hanson fails to teach or suggest a composition for the ribbon because Hanson is only concerned with winding the ribbon. Consequently, Hanson fails to show overlapping at least widthwise edge portions of the wound rubber members, or continuously extruding the first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, or stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped member while holding the same extrusion sectional shape and helically winding on the first rubber layer, or even forming any subsequent layers, or using two or more rubber compositions indicating different moduli after the curing. There is no logical reason or suggestion for Hanson to disclose a particular composition because the problems presented and solved by Hanson in winding a rubber strip are different than

Applicants' invention in creating a gradual blend. In fact, Hanson indicates that if different rubber stock is used, the tuber 60 should be cleaned out before feeding the next rubber (see col. 7, lines 38-44). One can infer from this passage that no mixing of different rubber stock is desired. Thus, Hanson does not provide for the motivation for combining its teaching with Deist, or overcomes the deficiencies of Deist.

Likewise Okada fails to overcome the deficiencies in Deist. Specifically, Okada fails to show overlapping at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, or continuously extruding the first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, and stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped member while holding the same extrusion sectional shape and helically winding on the first rubber layer while overlapping with at least part of the first rubber layer and overlapping at least widthwise edge portions of the wound second band-shaped rubber member with each other to form a second rubber layer. Moreover, Okada fails to show using two or more rubber compositions indicating different moduli after the curing.

Okada shows a method of forming a green tire by winding green rubber first on an adjusting drum upon extrusion from an extruder in a length corresponding to the rubber quantity of a tire and then unwinding the rubber strip from the adjusting drum onto the outer circumference of a rotary support member in order to build up the tire as seen in col. 1, lines 61 through col. 2, line 3. Thus, in Okada, the extruded rubber is not directly wound on the outer circumference of the rotary support member, but is wound temporarily on the adjusting drum in the rubber quantity necessary for the tire constituent portion and is then wound on the outer circumference of the rotary support member to form the tire constituent

portion. To directly wind the extruded rubber onto the circumference of the rotary support member would be against the teaching found in Okada.

Further, Okada merely show in its Fig. 3, strips of side tread material 12 and rim cushion material 13 being completely overlapped with a previous strip. Figs. 4, 5 and 6 shows strips S3, S4, and S5, respectively, overlapping previously laid strips. As such, Okada fails to teach or suggest any blending of rubber material but to overlap strips. Consequently, Okada fails to show overlapping at least widthwise edge portions of the wound rubber members, or continuously extruding the first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, or stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped member while holding the same extrusion sectional shape and helically winding on the first rubber layer, or even forming any subsequent layers, or using two or more rubber compositions indicating different moduli after the curing. There is no logical reason or suggestion for Hanson to disclose a particular composition because the problems presented and shown in Okada in winding a rubber strip are different than Applicants' invention, in creating a gradual blend.

Thus, Okada does not provide for the motivation for combining its teaching with Deist, or overcomes the deficiencies of Deist. Therefore, Deist in view Hanson and Okada does not render obvious the subject matter of claim 1. Accordingly, the rejection of claim 1 under 35 U.S.C. §103(a) as obvious by Deist in view of Hanson and Okada is improper and should be reversed.

I. <u>Claim 2 is not Obvious over Deist in view of Hanson and Okada</u>

Claim 2 recites only the second rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the second

rubber layer so as to overlap with at least a part of the second rubber layer to form a third rubber layer.

A *prima facie* case of obviousness has not been shown to reject claim 2 in view of Hanson and Okada. Deist and the deficiencies of the Deist disclosure are discussed in paragraph VI.B.

Hanson fails to overcome the deficiencies in Deist. Hanson shows a method of making pneumatic vehicle tires by forming a ribbon of very small cross section relative to the tire cross section, and leading the ribbon directly onto the carcass band and by winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band to partially overlap successive turns of the ribbon. That is, Hanson merely discloses that successive turn of the ribbon overlaps previously laid ribbons (see col. 2, lines 45-51 and col. 5, lines 25-30). Hanson fails to disclose extruding a second rubber or holding the same extrusion sectional shape and helically winding on the second rubber layer so as to overlap with at least a part of the second rubber layer to form a third rubber layer.

Moreover, Okada fails to overcome the deficiencies in Deist. Okada shows a method of forming a green tire by winding green rubber first on an adjusting drum upon extrusion from an extruder in a length corresponding to the rubber quantity of a tire and then unwinding the rubber strip from the adjusting drum onto the outer circumference of a rotary support member in order to build up the tire as seen in col. 1, lines 61 through col. 2, line 3. Thus, in Okada, the extruded rubber is not directly wound on the outer circumference of the rotary support member, but is wound temporarily on the adjusting drum in the rubber quantity necessary for the tire constituent portion and is then wound on the outer circumference of the rotary support member to form the tire constituent portion. To directly

wind the extruded rubber onto the circumference of the rotary support member would be against the teaching found in Okada.

Further, Okada merely show in its Fig. 3, strips of side tread material 12 and rim cushion material 13 being completely overlapped with a previous strip. Figs. 4, 5 and 6 shows strips S3, S4, and S5, respectively, overlapping previously laid strips. Okada fails to disclose extruding a second rubber or holding the same extrusion sectional shape and helically winding on the second rubber layer so as to overlap with at least a part of the second rubber layer to form a third rubber layer. Therefore, Deist in view Hanson and Okada does not render obvious the subject matter of claim 2. Accordingly, the rejection of claim 2 under 35 U.S.C. §103(a) as obvious by Deist in view of Hanson and Okada is improper and should be reversed.

J. Claim 3 is not Obvious over Deist in view of Hanson and Okada

Claim 3 recites the second rubber material and a third rubber material are successively extruded through the extruder so as to stepwise or gradually increase a blending ratio of the third rubber material to the second rubber material while holding the same extrusion sectional shape and helically wound on the third rubber layer while overlapping with at least a part of the third rubber layer to from a fourth rubber layer.

Deist fails to suggest the features of claim 3 as discussed in paragraph VI.C. Further, a *prima facie* case of obviousness has not been shown to reject claim 3 in view of Hanson and Okada.

Hanson fails to overcome the deficiencies in Deist because Hanson merely shows a method of making pneumatic vehicle tires by forming a ribbon of very small cross section relative to the tire cross section, and leading the ribbon directly onto the carcass band and by winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band to partially overlap successive turns of the ribbon. That

is, Hanson merely discloses that successive turn of the ribbon overlaps previously laid ribbons (see col. 2, lines 45-51 and col. 5, lines 25-30). Hanson fails to disclose that the second rubber material and a third rubber material are successively extruded through the extruder so as to stepwise or gradually increase a blending ratio of the third rubber material to the second rubber material while holding the same extrusion sectional shape and helically wound on the third rubber layer while overlapping with at least a part of the third rubber layer to form a fourth rubber layer.

Moreover, Okada fails to overcome the deficiencies in Deist. Okada shows a method of forming a green tire by winding green rubber first on an adjusting drum upon extrusion from an extruder in a length corresponding to the rubber quantity of a tire and then unwinding the rubber strip from the adjusting drum onto the outer circumference of a rotary support member in order to build up the tire as seen in col. 1, line 61 through col. 2, line 3. Thus, in Okada, the extruded rubber is not directly wound on the outer circumference of the rotary support member, but is wound temporarily on the adjusting drum in the rubber quantity necessary for the tire constituent portion and is then wound on the outer circumference of the rotary support member to form the tire constituent portion. To directly wind the extruded rubber onto the circumference of the rotary support member would be against the teaching found in Okada.

Further, Okada merely shows in Fig. 3, strips of side tread material 12 and rim cushion material 13 being completely overlapped with a previous strip. Figs. 4, 5 and 6 shows strips S3, S4, and S5, respectively, overlapping previously laid strips. Okada fails to disclose that the second rubber material and a third rubber material are successively extruded through the extruder so as to stepwise or gradually increase a blending ratio of the third rubber material to the second rubber material while holding the same extrusion sectional

shape and helically wound on the third rubber layer while overlapping with at least a part of the third rubber layer to form a fourth rubber layer.

Therefore, Deist in view Hanson and Okada does not render obvious the subject matter of claim 3. Accordingly, the rejection of claim 3 under 35 U.S.C. §103(a) as obvious by Deist in view of Hanson and Okada is improper and should be reversed.

K. Claim 4 is not Obvious over Deist in view of Hanson and Okada

Claim 4 recites only the third rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the fourth rubber layer so as to overlap with at least a part of the fourth rubber layer to form a fifth rubber layer.

Deist fails to suggest the features of claim 4 as discussed in paragraph VI.D. Further, a *prima facie* case of obviousness has not been shown to reject claim 4 in view of Hanson and Okada.

Hanson fails to overcome the deficiencies in Deist because Hanson merely shows a method of making pneumatic vehicle tires by forming a ribbon of very small cross section relative to the tire cross section, and leading the ribbon directly onto the carcass band and by winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band to partially overlap successive turns of the ribbon. That is, Hanson merely discloses that successive turns of the ribbon partially overlaps previously laid ribbons (see col. 2, lines 45-51 and col. 5, lines 25-30). Hanson fails to disclose that the third rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the fourth rubber layer so as to overlap with at least a part of the fourth rubber layer to form a fifth rubber layer.

Moreover, Okada fails to overcome the deficiencies in Deist. Okada shows a method of forming a green tire by winding green rubber first on an adjusting drum upon extrusion from an extruder in a length corresponding to the rubber quantity of a tire and then unwinding the rubber strip from the adjusting drum onto the outer circumference of a rotary support member in order to build up the tire as seen in col. 1, line 61 through col. 2, line 3. Thus, in Okada, the extruded rubber is not directly wound on the outer circumference of the rotary support member, but is wound temporarily on the adjusting drum in the rubber quantity necessary for the tire constituent portion and is then wound on the outer circumference of the rotary support member to form the tire constituent portion. To directly wind the extruded rubber onto the circumference of the rotary support member would be against the teaching found in Okada.

Further, Okada merely show in its Fig. 3, strips of side tread material 12 and rim cushion material 13 being completely overlapped with a previous strip. Figs. 4, 5 and 6 shows strips S3, S4, and S5, respectively, overlapping previously laid strips. Okada fails to disclose that the third rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the fourth rubber layer so as to overlap with at least a part of the fourth rubber layer to form a fifth rubber layer.

Therefore, Deist in view Hanson and Okada does not render obvious the subject matter of claim 4. Accordingly, the rejection of claim 4 under 35 U.S.C. §103(a) as obvious by Deist in view of Hanson and Okada is improper and should be reversed.

L. Claim 6 is not Obvious over Deist in view of Hanson and Okada

Claim 6 recites that two or more rubber materials have such a property that at least one of 100% modulus and 300% modulus after the curing differs by not less than 1.0 MPa between the two rubber materials to be extruded.

Deist fails to suggest the features of claim 6 as discussed in paragraph VI.E.

Further, Hanson fails to overcome the deficiencies in Deist. Hanson merely shows a method of making pneumatic vehicle tires by forming a ribbon of very small cross section relative to the tire cross section, and leading the ribbon directly onto the carcass band and by winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band to partially overlap successive turns of the ribbon. Hanson does not disclose using different rubber at all, let alone that different types of rubber may be used having such a property that at least one of a 100% modulus and 300% modulus after curing differs by not less than 1.0 MPa between the two rubber materials to be extruded.

Further, Okada fails to overcome the deficiencies in Deist. Okada merely shows a method of forming a green tire by winding green rubber first on an adjusting drum upon extrusion from an extruder in a length corresponding to the rubber quantity of a tire and then unwinding the rubber strip from the adjusting drum onto the outer circumference of a rotary support member in order to build up the tire. Okada does not disclose using different rubber at all, let alone that different types of rubber may be used having such a property that at least one of a 100% modulus and 300% modulus after curing differs by not less than 1.0 MPa between the two rubber materials to be extruded.

Therefore, Deist in view Hanson and Okada does not render obvious the subject matter of claim 6. Accordingly, the rejection of claim 6 under 35 U.S.C. §103(a) as obvious by Deist in view of Hanson and Okada is improper and should be reversed.

M. Claim 8 is not Obvious over Deist in view of Hanson and Okada

Claim 8 recites that among three rubber materials, the first rubber material is a rubber composition for a tread under cushion in the cured tire, the second rubber material is a rubber composition for a tread base, and the third rubber material is a rubber composition for a tread cap.

A *prima facie* case of obviousness has not been shown to reject claim 8 over Deist in view of Hanson and Okada. As discussed in paragraph VI.F., Deist fails to disclose or suggest an extruder or a method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support.

Hanson fails to overcome the deficiencies in Deist. Hanson shows a method of making pneumatic vehicle tires by forming a ribbon of very small cross section relative to the tire cross section, and leading the ribbon directly onto the carcass band and by winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band to partially overlap successive turns of the ribbon. Hanson fails to disclose three rubber materials, the first rubber material is a rubber composition for a tread under cushion in the cured tire, the second rubber material is a rubber composition for a tread base, and the third rubber material is a rubber composition for a tread cap that is made using an extruder and a method, among others, of helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, and further helically winding the first band-shaped rubber member on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, or other subsequent layers.

Moreover, Okada fails to overcome the deficiencies in Deist. Okada merely shows a method of forming a green tire by winding green rubber first on an adjusting drum upon extrusion from an extruder in a length corresponding to the rubber quantity of a tire and then unwinding the rubber strip from the adjusting drum onto the outer circumference of a rotary support member in order to build up the tire. Okada fails to disclose three rubber materials, the first rubber material is a rubber composition for a tread under cushion in the cured tire, the second rubber material is a rubber composition for a tread base, and the third rubber

material is a rubber composition for a tread cap, as recited in claim 8, that is made using an extruder and a method, among others, of helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, and further helically winding the first band-shaped rubber member on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer, or other subsequent layers. Therefore, Deist in view Hanson and Okada not render obvious the subject matter of claim 8. Accordingly, the rejection of claim 8 under 35 U.S.C. §103(a) as obvious by Deist in view of Hanson and Okada is improper and should be reversed.

N. Claims 13, 14 and 15 are not Obvious over Deist in view of Hanson and Okada

Claims 13-15 recite respectively that the second, the second and the third, and the third rubber material extruded through the extruder and forming the third, fourth and the fifth rubber layer, respectively, is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other.

As discussed in paragraph VI.G., Deist alone fails to disclose an extruder or that the rubber material extruded through the extruder and forming the rubber layer is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other.

Hanson fails to overcome the deficiencies in Deist. Hanson shows a method of making pneumatic vehicle tires by forming a ribbon of very small cross section relative to the tire cross section, leading the ribbon directly onto the carcass band, and, by winding the ribbon continuously on the carcass band and simultaneously controlling relative axial movement of the carcass band, to partially overlap successive turns of the ribbon. Hanson fails to disclose that the rubber material extruded through the extruder and forming the rubber

layer is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other.

Moreover, Okada fails to overcome the deficiencies in Deist. Okada merely shows a method of forming a green tire by winding green rubber first on an adjusting drum upon extrusion from an extruder in a length corresponding to the rubber quantity of a tire and then unwinding the rubber strip from the adjusting drum onto the outer circumference of a rotary support member in order to build up the tire. Okada fails to disclose that the rubber material extruded through the extruder and forming the rubber layer is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other. Therefore, Deist in view Hanson and Okada not render obvious the subject matter of claims 13, 14 and 15. Accordingly, the rejection of claims 13-15 under 35 U.S.C. §103(a) as obvious by Deist in view of Hanson and Okada is improper and should be reversed.

VII. CONCLUSION

Claims 1-4, 6, 8 and 13-15 are not obvious over Deist. Also, claims 1-4, 6, 8 and 13-15 are not obvious over Deist in view of Hanson and Okada. Therefore, claims 1-4, 6, 8 and 13-15 are patentable over all applied references.

The Honorable Board is requested to reverse the rejections set forth in the Final Rejection and return the application to the Examiner to pass this case to issue.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Seth S. Kim
Registration No. 54,577

JAO:SSK/aaw

Date: March 18, 2004

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

APPENDIX

CLAIMS:

1. A method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by helically winding a band-shaped uncured rubber material extruded through an extruder on a rotating support, which comprises using two or more rubber compositions indicating different moduli after the curing as a rubber material fed to the extruder;

extruding a first rubber material through the extruder as a first band-shaped rubber member and helically winding the first band-shaped rubber member on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer; and

continuously extruding the first rubber material and adding a second rubber material through the extruder to create a blend of the first rubber material and the second rubber material, and stepwise or gradually increasing a blending ratio of the second rubber material to the first rubber material as a second band-shaped member while holding the same extrusion sectional shape and helically winding on the first rubber layer while overlapping with at least a part of the first rubber layer and overlapping at least widthwise edge portions of the wound second band-shaped rubber member with each other to form a second rubber layer.

2. The method according to claim 1, wherein only the second rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the second rubber layer so as to overlap with at least a part of the second rubber layer to form a third rubber layer.

3. The method according to claim 2, wherein the second rubber material and a third rubber material are successively extruded through the extruder so as to stepwise or

gradually increase a blending ratio of the third rubber material to the second rubber material while holding the same extrusion sectional shape and helically wound on the third rubber layer while overlapping with at least a part of the third rubber layer to form a fourth rubber layer.

4. The method according to claim 3, wherein only the third rubber material is successively extruded through the extruder while holding the same extrusion sectional shape and helically wound on the fourth rubber layer so as to overlap with at least a part of the fourth rubber layer to form a fifth rubber layer.

6. The method according to claim 1, wherein two or more rubber materials have such a property that at least one of 100% modulus and 300% modulus after the curing differs by not less than 1.0 MPa between the two rubber materials to be extruded.

8. The method according to claim 1, wherein among three rubber materials, the first rubber material is a rubber composition for a tread under cushion in the cured tire, the second rubber material is a rubber composition for a tread base, and the third rubber material is a rubber composition for a tread cap.

13. The method according to claim 2, wherein the second rubber material extruded through the extruder and forming the third rubber layer is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other.

14. The method according to claim 3, wherein the second rubber material and the third rubber material extruded through the extruder and forming the fourth rubber layer is helically wound on the rotating support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other.

15. The method according to claim 4, wherein the third rubber material extruded through the extruder and forming the fifth rubber layer is helically wound on the rotating

support along a rotating axial direction of the support so as to overlap at least widthwise edge portions of the wound rubber members with each other.